

## THE CLAIMS

What is claimed is:

- 1           1.       An information recording system, comprising:  
2                   a storage medium having a plurality of adjacent tracks, each of the adjacent  
3 tracks include a plurality of storage elements that are arranged substantially along each  
4 respective track in substantially a regular manner; and  
5                   a head disposed in proximity to the storage medium and having a width that  
6 substantially spans at least two adjacent tracks.
- 1           2.       The information recording system according to claim 1, wherein the storage  
2 medium is a magnetic storage medium, and the head is a magnetic head.
- 1           3.       The information recording system according to claim 2, wherein each track is  
2 located substantially in a plane within the storage medium, and  
3                   wherein at least one storage element is a magnetic domain storage element  
4 that is substantially perpendicular to the plane in which the track in which the storage  
5 element is arranged is substantially located.
- 1           4.       The information recording system according to claim 2, wherein each track is  
2 located substantially in a plane within the storage medium, and  
3                   wherein at least one storage element is a magnetic domain storage element

4 that is substantially parallel to the plane in which the track in which the storage element is  
5 substantially located.

1 5. The information recording system according to claim 2, wherein at least a  
2 portion of the magnetic storage medium is patterned.

1 6. The information recording system according to claim 2, wherein the magnetic  
2 storage medium is a perpendicular magnetic storage medium.

1 7. The information recording system according to claim 2, wherein each track  
2 has an associated along-track direction,  
3 wherein the storage elements are further arranged substantially along first and  
4 second axes, the first axis being substantially perpendicular to the second axis, and  
5 wherein the first and second axes are each locally substantially  $45^\circ$  from the  
6 respective along-track directions of the tracks.

1 8. The information recording system according to claim 7, wherein the along-  
2 track direction of the tracks is a circle.

1 9. The information recording system according to claim 7, wherein the along-  
2 track direction of the tracks is a spiral.

1           10.     The information recording system according to claim 2, wherein each adjacent  
2 track spanned by the head has a different phase.

1           11.     The information recording system according to claim 2, wherein the magnetic  
2 storage medium has an areal density of at least about 64 Gbit/in<sup>2</sup>.

1           12.     The information recording system according to claim 2, wherein the magnetic  
2 storage medium has an areal density of at least about 128 Gbit/in<sup>2</sup>.

1           13.     The information recording system according to claim 2, wherein the magnetic  
2 storage medium has an areal density of at least about 256 Gbit/in<sup>2</sup>.

1           14.     The information recording system according to claim 2, wherein the magnetic  
2 storage medium is a magnetic disk.

1           15.     The information recording system according to claim 2, wherein the magnetic  
2 storage medium is a magnetic tape.

1           16.     The information recording system according to claim 2, wherein the magnetic  
2 storage medium is a magnetic strip.

1           17.    The information recording system according to claim 2, wherein the  
2 information recording system is part of a magnetic medium disk drive.

1           18.    The information recording system according to claim 1, wherein the storage  
2 medium is an optical storage medium, and the head is an optical head.

1           19.    The information recording system according to claim 18, wherein at least a  
2 portion of the optical storage medium is patterned.

1           20.    The information recording system according to claim 18, wherein each track  
2 has an associated along-track direction,  
3                    wherein the storage elements are further arranged substantially along first and  
4 second axes, the first axis being substantially perpendicular to the second axis, and  
5                    wherein the first and second axes are each locally substantially 45° from the  
6 respective along-track directions of the tracks.

1           21.    The information recording system according to claim 20, wherein the along-  
2 track direction of the tracks is a circle.

1           22.    The information recording system according to claim 20, wherein the along-

2 track direction of the tracks is a spiral.

1 23. The information recording system according to claim 1, wherein the head  
2 reads information from at least two adjacent tracks spanned by the head.

1 24. The information recording system according to claim 1, wherein the head  
2 writes information to at least two adjacent tracks spanned by the head.

1 25. The information recording system according to claim 1, wherein the plurality  
2 of adjacent tracks is formed by at least one spiral-shaped track.

1 26. The information recording system according to claim 1, wherein the plurality  
2 of adjacent tracks is formed by a plurality of concentric tracks.